

CLAIMS

1) A method of producing a package of tobacco articles complete with a folded coupon; the method
5 comprising engaging the folded coupon (5) by means of a feed device (9) to feed the folded coupon (5) to a seat (7) of a packing conveyor (6) and onto a packet (3, 4) of tobacco articles carried by the seat (7); and the method being characterized by comprising the steps of unwinding
10 a flat strip (12) off a reel (13); feeding the flat strip (12) to a folding station (14) where the strip (12) is folded over along a number of fold lines (15) parallel to the travelling direction of the strip (12); and feeding the folded strip (12) to a cutting station (16) where the
15 folded strip (12) is cut along a cutting line crosswise to the travelling direction of the strip (12) to detach from the strip (12) the folded coupon (5), which is subsequently engaged by the feed device (9).

2) A method as claimed in Claim 1, wherein, at the
20 folding station (14), the flat strip (12) is folded along a number of fold lines (15) parallel to the travelling direction of the strip (12) to form an "accordion" fold.

3) A method as claimed in Claim 1, wherein, at the folding station (14), the flat strip (12) is initially
25 folded into a V along a fold line (15), and the V-folded strip (12) is then fed between two rollers (18) cooperating with each other to complete the fold along the fold line (15).

4) A method as claimed in Claim 3, wherein, to be initially folded into a V, the flat strip (12) is run against a further roller (17) positioned parallel to the travelling direction of the strip (12); the further
5 roller (17) having a V-shaped lateral surface, and being fitted to a respective frame (19) to rotate freely about an axis (20) crosswise to the travelling direction of the strip (12).

5) A method as claimed in Claim 3, wherein, to be
10 initially folded into a V, the strip (12) is run against a fixed, substantially triangular folding edge (36).

6) A method as claimed in Claim 5, wherein the folding edge (36) is flat and substantially in the form of an isosceles triangle having a base (37) perpendicular
15 to the travelling direction of the strip (12), and the vertex (38), opposite the base (37), facing the fold line (15).

7) A method as claimed in Claim 1, wherein the folded strip (12) is fed in steps to the cutting station
20 (16).

8) A method as claimed in Claim 7, wherein the flat strip (12) is unwound off the reel (13) and fed to the folding station (14) continuously at substantially constant speed; a bend (26) in the folded strip (12)
25 being formed between the folding station (14) and the cutting station (16); and the length of the bend (26) being varied constantly to permit cyclic zeroing of the speed of the folded strip (12) at the cutting station

(16), and so enable the folded strip (12) to be fed in steps to the cutting station (16).

9) A method as claimed in Claim 7, wherein the feed device (9) comprises a gripping head (10), and, when
5 cutting the folded strip (12), a cutting knife (30) and the gripping head (10) are oscillated in time with each other about substantially the same first axis (31) crosswise to the travelling direction of the strip (12), and with concordant substantially equal movements to keep
10 the cutting knife (30) and the gripping head (10) substantially contacting each other, with the folded coupon (5) just detached from the strip (12) in between.

10) A method as claimed in Claim 9, wherein the gripping head (10) is carried by a transfer wheel (9),
15 rotating continuously about a second axis (33) crosswise to the travelling direction of the strip (12), by the interposition of a respective arm (34) extending outwards from the transfer wheel (9); the arm (34) being orientable, with respect to the transfer wheel (9), about
20 a third axis (35) parallel to the second axis (33), so as to keep the gripping head (10) substantially stationary at the cutting station (16) when cutting the folded strip (12).

11) A machine for producing a package of tobacco
25 articles complete with a folded coupon; the machine (1) comprising a packing conveyor (6) having a seat (7) for carrying a respective packet (3, 4) of tobacco articles; and a feed device (9) for engaging the folded coupon (5)

to feed the folded coupon (5) to the seat (7) and onto the packet (3, 4) of tobacco articles; the machine (1) being characterized by comprising an unwinding device (11) for unwinding a flat strip (12) off a reel (13); a
5 folding station (14) where the flat strip (12) unwound of the reel (13) is folded over along a number of fold lines (15) parallel to the travelling direction of the strip (12); and a cutting station (16) where the folded strip (12) is cut along a cutting line crosswise to the
10 travelling direction of the strip (12) to detach from the strip (12) the folded coupon (5), which is subsequently engaged by the feed device (9).

12) A machine as claimed in Claim 11, wherein the folding station (14) comprises folding means (17; 36) for
15 folding the strip (12) partly into a V along a fold line (15); and two rollers (18) cooperating with each other to receive the V-folded strip (12) between them to complete the fold along the fold line (15).

13) A machine as claimed in Claim 12, wherein the
20 folding means (17; 36) comprise a further roller (17), which is positioned parallel to the travelling direction of the strip (12), has a V-shaped lateral surface, and is fitted to a respective frame (19) to rotate freely about an axis (20) crosswise to the travelling direction of the
25 strip (12); the strip (12) being initially folded into a V by being run against the further roller (17).

14) A machine as claimed in Claim 12, wherein the folding means (17; 36) comprise a fixed triangular

folding edge (36); the strip (12) being initially folded into a V by being run against the fixed folding edge (36).

15 15) A machine as claimed in Claim 14, wherein the folding edge (36) is flat and substantially in the form of an isosceles triangle having a base (37) perpendicular to the travelling direction of the strip (12), and the vertex (38), opposite the base (37), facing the fold line (15).

10 16) A machine as claimed in Claim 11, wherein first drive means (21) are provided to feed the flat strip (12) to the folding station (14) continuously at substantially constant speed; and second drive means (23) are provided to feed the folded strip (12) in steps to the cutting
15 station (16); a compensating device (25) being interposed between the first and second drive means (21, 23) to form a bend (26) of varying length in the folded strip (12).

17) A machine as claimed in Claim 11, wherein the cutting station (16) comprises a fixed anvil (27) and a
20 movable cutting member (28) located in succession in the travelling direction of the strip (12); the cutting member (28) comprising a knife (30) hinged to oscillate cyclically about a first axis (31) crosswise to the travelling direction of the strip (12).

25 18) A machine as claimed in Claim 17, wherein the feed device (9) comprises a gripping head (10), which is carried by a transfer wheel (9), rotating continuously about a second axis (33) crosswise to the travelling

direction of the strip (12), by the interposition of a respective arm (34) extending outwards from the transfer wheel (9); the arm (34) being orientable, with respect to said transfer wheel (9), about a third axis (35) parallel
5 to the second axis (33), so as to keep the gripping head (10) substantially stationary at the cutting station (16) when cutting the folded strip (12).

19) A machine as claimed in Claim 11, wherein the folding station (14) comprises a fixed folding profile
10 (39) for folding the strip (12) into a V along a longitudinal fold line (15); and a guide device (47) for keeping a portion of the strip (12) not being folded laid flat in a given position on a top surface (45) of the folding profile (39).

15 20) A machine as claimed in Claim 19, wherein the guide device (47) comprises a suction belt (48) looped about two end pulleys (49, 50) and connected to a suction chamber (51) for generating suction through the belt (48).

20 21) A machine as claimed in Claim 20, wherein a first pulley (49) is powered and rotates in time with the travelling speed of the strip (12), while a second pulley (50) is mounted idly.

22) A machine as claimed in Claim 21, wherein the
25 first pulley (49) is preferably also used as a return pulley for the strip (12).

23) A machine as claimed in Claim 20, wherein both the pulleys (49, 50) are mounted idly, and a first pulley

(49) is designed and located to also define a return pulley for the strip (12).

24) A machine as claimed in Claim 11, wherein the folding station (14) comprises a fixed folding profile (39) for folding the strip (12) into a V along a longitudinal fold line (15); the folding profile (39) having a folding edge (40) sloping at a given angle with respect to the travelling direction of the strip (12); the folding profile (39) being shaped to have, in the travelling direction of the strip (12), a varying transverse dimension, which substantially equals that of the non-folded strip (12) at an initial portion (41), and is gradually reduced, by the slope of the folding edge (40), to a transverse dimension, at an end portion (42), equal to half the transverse dimension of the folded strip (12); a deflecting member (43) being provided to hold the strip (12) in contact with the end portion (42) at the folding edge (40), so as to force the strip (12) to fold gradually about the folding edge (40) along the whole length of the folding profile (39).

25) A machine as claimed in Claim 24, wherein the end portion (42) of the folding profile (39) extends a given length in the travelling direction of the strip, with a constant transverse dimension equal to the transverse dimension of the folded strip (12).

26) A machine as claimed in Claim 25, wherein the end portion (42) of the folding profile (39) has a change in slope (44) at the part contacting the deflecting

member (43).

27) A machine as claimed in Claim 24, wherein the
deflecting member (43) is defined by a roller mounted
idly to rotate freely about a respective longitudinal
5 axis of symmetry.

28) A machine as claimed in Claim 19, wherein a
compensating device (52) is provided upstream from the
folding station (14).